Brookhaven National Laboratory National Synchrotron Light Source	**Number:** LS-PPS-0027	**Revision:** A
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Subject: **X14B** **Radiological Interlock Test**

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*Approval signatures on file with master copy.

Test Reason:	Test Result:	☐ Passed ☐ Failed
	Test Type:	☐ Full ☐ Partial
Test Date:	Start Time:	Finish Time:
Tester 1:	Assistant 1:	
Tester 2:	Assistant 2:	

Preparation:

Inform control room operator that test will be done. _____

Turn off 'Red Tag' switch on x-ray ring interlock, and apply LOTO to X-Ray Security system. _____

Verify that vacuum valves and water interlocks are OK on the beam lines that will be checked for Phase I beamlines or connect user interlock test jumper. _____

1. Place latch device on door lock so key can be removed. Place switch holders on door switches. Search hutch, put door key in SRU and turn and open safety shutter.

    The "Beam On" sign turns ON _____

	Hutch	
	Top	**Bottom**

    Remove holder from switch 2.

    RIB latch light comes ON _____ _____

2. Replace holder on switch 2.

    RIB cannot be reset unless SOR key is turned. _____ _____

3. Remove holder on switch 1.

    Safety shutter closes _____ _____
    RIA latch light comes on _____ _____
    RIA can't be reset w/o SOR _____ _____

4. Replace holder on switch 1. Interlock hutch, leave shutter closed.

    Hutch Kirk key (KKH) cannot be removed from SRU unless button is pushed _____

5. Open safety shutter.

    KKH cannot be removed even if button is pushed _____

6. Close shutters. Turn KKH and note where solenoid unit stops rotation. Push the button and turn key just beyond this point, but not far enough to actuate "key removed" switch. Release the button and leave key in this position. Open shutter, remove KKH, and replace.

    RIA latch light comes on _____
    RIB latch light comes on _____
    The safety shutter closes _____

7.   With hutch interlocked, leave shutter closed.

 Beam line transfer key can be removed only if button on SRU is pushed   _____

 Open safety shutter.

 Beam line transfer key can't be removed even if button is pushed   _____

8.   Close safety shutter. "Cheat" SRU as described in step 6. Open safety shutter, remove the key and replace.

 RIA latch light comes on   _____
 RIB latch light comes on   _____
 The safety shutter closes   _____
 SPA comes on   _____
 SPA can't be reset w/o SOR   _____

 Reset RIA and RIB

9.   Open the safety shutter. Remove the Control Room Shutter Enable Key for this beam line, then replace the key.

 The safety shutter closes   _____
 RIA latch light comes on   _____
 The "Control Room Shutter Enable" light goes out   _____
 The SPA latch comes on (after the key is back on)   _____
 The safety shutter cannot be opened   _____

 Reset RIA and SPA

10.   Open the Safety Shutter.
 Turn "Auto Open" key to "ON".
 At the Control Room Operator's Console, switch the shutter master enable to "Inhibit" and back to "Enable"

 The safety shutter closes   _____
 And then re-opens   _____

 Turn "Auto Open" key to "OFF".
 Switch the master enable to "Inhibit" and back to "Enable"

 The safety shutter closes   _____
 And does NOT re-open   _____

11. One person goes to the x-ray equipment area and resets the indicators for RIAX and RIBX at SR100.
Open the safety shutter.
Remove switch holder from door switch number 2.

                RIB latch light comes on   _____
                RIBX "Loop Enabled" indicator goes out   _____
                RIBX "Loop Disabled" indicator comes on   _____

Replace switch holder.
                RIBX cannot be reset   _____
Reset RIB

                RIBX CAN be reset
                ("Loop Enabled" indicator comes on)   _____

12. Remove holder from door switch 1.

                RIA latch light comes on   _____
                RIAX "Loop Enabled" indicator goes out   _____
                RIAX "Loop Disabled" indicator comes on   _____
                The safety shutter closes   _____
                RIAX cannot be reset   _____
Reset RIA

                RIAX CAN be reset
                ("Loop Enabled" indicator comes on)   _____

13. Remove the holders from the switches. Remove the latch device from the door lock(s). Stand inside the hutch and open and close the door.
                Both door switches operate freely and each makes a "click" when door is opened

	Hutch Door Switch	
	Top	**Bottom**
(Complete test for both door switches)	_____	_____

14. Search the hutch. Locate the safety shutter associated with the beam line by tracing the beam pipe through the shield wall. Do not rely on labels on the shutter mechanism. Open the shutter.

                The correct shutter opens   _____
                No other shutter at that saw tooth opens or attempts to open   _____
Close the safety shutter.
                The mechanism moves freely and without hesitation   _____

15. Remove user interlock test jumper (if applicable).   _____

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